

**WHAT IS CLAIMED IS:**

1. An assembly for attaching a liner to a pump module, the assembly comprising:
  - a bushing attached to the pump module;
  - a liner having a first end disposed within said bushing and a second end projecting from said bushing, wherein the first end sealingly engages the pump module;
  - an annular shoulder on said cylindrical liner;
  - a tension body connected to said bushing;
  - a locking body threadably engaged with said tension body and having a first end in contact with said annular shoulder so as to maintain the sealing engagement between said liner and the pump module.
2. The assembly of claim 1 further comprising a load cell operable to simultaneously apply a compressive load to said liner and a tension load to said tension body.
3. The assembly of claim 2 wherein said load cell comprises:
  - a hydraulic body releasably connected to said tension body; and
  - a piston sealingly engaged with said hydraulic body and operable to compress said liner against the pump module.
4. The assembly of claim 3 wherein said piston can be observed from outside said load cell.
5. The assembly of claim 3 wherein said locking body can be rotated while said load cell is connected to said tension body.
6. The assembly of claim 1 further comprising:
  - a hydraulic body connected to said tension body; and
  - a piston disposed within said hydraulic body and operable to engage the second end of said liner and urge said liner into sealing engagement with the pump module.
7. The assembly of claim 6 wherein said hydraulic body is detachably connected to said tension body.

8. The assembly of claim 6 wherein said locking body is accessible through a plurality of windows through said hydraulic body.

9. The assembly of claim 1 further comprising a plurality of apertures through said tension body.

10. A device for securing a liner to a pump module, the device comprising:

a bushing connected to the pump module and engaged with one end of the liner;

a tension member extending axially from said bushing;

a locking member having a first end threadably engaged with said tension member and a second end in contact with the liner, wherein said locking member is operable to maintain the position of the liner relative to the pump module;

a hydraulic body connected to said tension member;

a piston disposed within said hydraulic body and adapted to urge the liner into engagement with the pump module, wherein said piston acts to separate the second end of said locking member from the liner.

11. The device of claim 10 wherein said hydraulic body is detachably connected to said tension member.

12. The device of claim 10 wherein said locking member is accessible through a plurality of windows through said hydraulic body.

13. The device of claim 10 further comprising a plurality of apertures through said tension member.

14. A method for securing a liner to a pump module, the method comprising:

disposing a liner in a bushing connected to the pump module;

attaching a tension body to the bushing;

adjustably engaging a locking ring to contact the liner;

attaching a hydraulic body to the tension body;

applying hydraulic pressure to a piston disposed in the hydraulic body so as to compress the liner against the pump module; and

adjusting the locking ring to maintain contact with the liner.

15. The method of claim 14 further comprising:

removing hydraulic pressure from the piston; and  
detaching the hydraulic body from the tension body.

16. The method of claim 14 further comprising:

attaching the hydraulic body to the tension body;  
applying hydraulic pressure to a piston disposed in the hydraulic body so as to compress the liner against the pump module;  
disengaging the locking ring from the tension body; and  
removing the liner from the bushing.

17. The method of claim 15 wherein the locking ring is adjusted by hand.

18. The method of claim 14 wherein a tension load is applied to the tension body by the hydraulic body as hydraulic pressure is applied to the piston.

19. An apparatus for applying a pre-load to the engagement between a liner body and a pump module, the apparatus comprising:

a load cell having a hydraulic piston operable to apply a load compressing the liner body against the pump module;  
a locking member adapted to engage the liner body while the load is applied and maintain the position of the liner body when the load is removed; and  
a tension body connected between the pump module and said load cell such that said tension body is tensioned as the liner body is compressed against the pump module.

20. The apparatus of claim 19 wherein said load cell is removably connected to said tension body.

21. The apparatus of claim 19 wherein said locking member threadably engages said tension body.

22. The apparatus of claim 19 wherein said load cell comprises:

- a first end supporting the hydraulic piston;
- a cylindrical wall extending from said first end; and
- a second end having inwardly extending tabs adapted to engage said tension body.

23. The apparatus of claim 22 further comprising one or more windows through said cylindrical wall.

24. The apparatus of claim 19 wherein said tension body comprises:

- a first end connected to the pump module;
- a cylindrical wall extending from said first end; and
- a second end having an internal threaded surface and outwardly projecting grooves adapted to engage said load cell.

25. The apparatus of claim 24 wherein the cylindrical wall of said tension body further comprises a plurality of apertures therethrough.

26. The apparatus of claim 19 further comprising a bushing adapted to align the liner body and the pump module.

27. The apparatus of claim 26 wherein said bushing is adapted to connect said tension body to the pump module.